



United States  
Office of Personnel Management

**FWS Job Grading Standard  
for  
Aircraft Mechanical Parts  
Repairer**

**8840**

**TS-55, 6/89**

**Workforce Compensation and Performance Service  
Classification Programs Division  
June 1998, HRCD-5**

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## COVERAGE OF STANDARD

This standard covers nonsupervisory work involved in the repair, modification, overhaul/recondition, and test of mechanical parts and components removed from fixed and rotary wing aircraft such as control columns, transmissions, gear boxes, landing gear components, clutch assemblies, rotor head assemblies and blades, constant speed drives, mechanical actuators, wheel and rotor brake assemblies, cargo hooks, engine controls, cable tension regulators, accessory drive gear boxes, cargo winches, turbine blades, and compressor vanes. The work requires knowledge of the mechanical relationships and operational characteristics of mechanical parts and components being repaired or reworked. The work does not require a substantive knowledge of aircraft systems and their interrelationships.

## WORK NOT COVERED

This standard does not cover work that primarily involves:

- Maintenance and repair of fixed and rotary wing aircraft systems when such work requires a thorough knowledge of the operational characteristics and interrelationships of aircraft systems. (See [Job Grading Standard for Aircraft Mechanic, 8852.](#))
- Repair, overhaul, modification, and complete assembly (i.e., build up) of aircraft trainer systems. (See [Job Grading Standard for Aircraft Mechanic, 8852.](#))
- Modification, maintenance, and repair of hydraulic and pneumatic systems or components that actuate mechanisms or produce, control, and regulate fluid flow requiring knowledge of the physical principles governing the behavior of fluids (liquids and gases). (See [Job Grading Standard for Pseudraulic Systems Mechanic, 8255.](#))
- Repair, overhaul, and modification of accessory drive gear boxes, reduction gears, or torquemeter assemblies removed from aircraft engines when such work is incidental to work on the entire engine. (See [Job Grading Standard for Aircraft Engine Mechanic, 8602.](#))
- Modification, maintenance, and repair of hydraulic and pneumatic systems or components requiring substantive knowledge of aircraft structures and the relationship of hydraulic/pneumatic systems to the structure and to other aircraft systems. (See [Job Grading Standard for Aircraft Pseudraulic Systems Mechanic, 8268.](#))
- Routine assembling, disassembling, adjusting, repairing, modifying, reconditioning, and testing of nonaircraft mechanical parts and components where significant knowledge of component relationships and their functions in the major end item is not required. (See series definition for [Mechanical Parts Repairer, 4848.](#))

- General mechanical work in making a variety of repairs to powered ground and similar support equipment used for aircraft ground servicing; missile, aircraft, air control, and radar installations powered support; and general power generating systems. (See [Job Grading Standard for Powered Support Systems Mechanic, 5378](#).)
- Modification and repair of hydraulic, pneumatic, and mechanical systems requiring knowledge of armament equipment and systems such as artillery, missiles, torpedoes, mines, and decoys. (See [Job Grading Standard for Artillery Repairing, 6605](#), [Ordinance Equipment Mechanic, 6642](#), or [Aircraft Ordnance Systems Mechanic, 6652](#), [Smalls Arms Repairer, 6610](#).)
- Modification, maintenance, repair, and overhaul of aircraft propeller assemblies. (See series definition for [Aircraft Propeller Mechanic, 8810](#).)

## TITLES

Jobs covered by this standard below grade 9 are to be titled *Aircraft Mechanical Parts Worker*. Jobs covered by this standard at grade 9 and above are to be titled *Aircraft Mechanical Parts Repairer*.

## GRADE LEVELS

This standard describes three levels of nonsupervisory parts repairing work (grades 7, 9, and 10). Depending on the nature and complexity of the work performed, grade 9 or 10 may represent the highest nonsupervisory level or full performance level of aircraft mechanical parts repairing work found at a particular work facility.

The grade 9 and grade 10 contained in this standard represent two distinct full performance levels. The grade 9 does not work in support of or assist the grade 10.

This standard does not describe all possible grade levels at which jobs may be established in this occupation, or in any way limit the authority of agencies to assign work or particular duties to positions. If jobs differ substantially from the levels of skill, knowledge, and other work requirements of the grades described in this standard, they may warrant grading either above or below these grades, based on the application of sound job grading principles.

## HELPER AND INTERMEDIATE JOBS

Helper jobs are graded by the Office of Personnel Management [Job Grading Standard for Trades Helper](#). The grade 7 level in this standard does not apply to jobs that are part of a planned program of training and development of skills for advancement to a higher grade. Such trainee jobs are covered by the Office of Personnel Management [Job Grading Standard for Intermediate Jobs](#). (Grade 9 or grade 10 in this standard, whichever is representative of the principal level of work at the facility or work site, is to be used as the “journey level” in applying the Intermediate Job Grading Table.)

**8840-7****Aircraft Mechanical Parts Worker****8840-7**

*General:* Grade 7 aircraft mechanical parts workers perform work involving the disassembly, cleaning, inspection, repair, assembly, and maintenance of mechanical parts of aircraft components according to detailed maintenance and repair procedures. The work includes visual and dimensional examination of parts and less complex components such as fuel valves, rotor blades, compressor blades, and oil pumps for obvious defects such as nicks, scratches, leaks, or corrosion, or for worn, bent, or broken parts; replacing or reworking damaged parts; and performing bench tests for operability of moving parts. Grade 7 repairers may assist higher grade mechanical parts repairers on assignments involving mechanical components of greater complexity by disassembling and assembling the simpler items, erecting jigs and fixtures, and installing safety wires and seals.

*Skill and Knowledge:* Grade 7 aircraft mechanical parts workers are skilled in the use of test equipment and measuring devices such as bench test sets, micrometers, depth gauges, dial indicators, and calipers to inspect, dismantle, repair, and test mechanical assemblies and electro-mechanical components. The work requires the ability to rework and assemble parts into assemblies. They determine whether to rework or replace parts that exceed allowable wear thresholds based on visual detection of unusual wear patterns or measurements of disassembled parts compared to directly applicable go/no-go specifications. The work requires the ability to use lapping machines, drill presses, grinders, sanders, and other power and handtools to remove imperfections such as pits, nicks, protrusions, and scratches; and to assemble parts into assemblies and components by bolting, bonding, riveting, shimming, honing, lapping, or selective fitting from groups of like parts in restoring components to their original shape and configuration.

Grade 7 aircraft mechanical parts workers are knowledgeable of visual, tactile, and dimensional procedures designed to identify problems in uncomplicated assemblies such as pumps, sensors, turbine blades, diffusers, and rotor blades. For example, they are skilled in the use of common types of plastic resins, epoxies, acrylics and other similar materials to repair surface areas on rotor blade; also, they are skilled in the use of micropoise and static balancing equipment to balance rotor blades. They are capable of making intermediate and final adjustments during assembly of components involving alignment and clearances where critical tolerance requirements are not an essential factor. They have the ability to interpret single-view blueprints, drawings, diagrams, and similar drawings, and to use arithmetic and standard handbook formulae in performing dimensional measurements and maintaining required tolerances. They use a working knowledge of mechanical principles and a practical understanding of electricity to repair and test the various subassemblies.

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***Responsibility:*** Grade 7 aircraft mechanical parts workers receive assignments from their immediate supervisor, either orally or through work orders. They work independently from simple plans, sketches, and detailed specifications and complete work assignments that are usually routine and repetitive by following instructions and accepted trade practices. On routine work, they determine the proper methods, techniques, and procedures required to complete assignments. Decisions made are covered by specific, well established work methods and procedures. Work is subject to review in progress and upon completion. On new or unusually difficult assignments, the supervisor or a higher graded worker explains the specific procedures and the sequence to be followed and checks frequently for adherence to instructions.

***Physical Effort:*** Grade 7 aircraft mechanical parts workers frequently handle objects weighing up to 18 kilograms (40 pounds) unassisted and occasionally objects weighing up to 32 kilograms (70 pounds) with assistance of other workers or weight handling equipment. They are required to lift, reach, bend, walk, pull, push, sit, and stand for prolonged periods of time.

***Working Conditions:*** Grade 7 aircraft mechanical parts workers usually perform work inside areas that are adequately lighted, ventilated, and heated. They are frequently exposed to loud noise from the movement of machinery and test equipment; to the possibility of cuts, burns, strains, electrical shock, and abrasions from handling equipment or from moving parts of machinery; and to unpleasant conditions from dirt, solvents, fuel, toxic fumes, grease, and gases. Floor surfaces may be wet, oily, or slippery. Various protective devices such as ear plugs, face shields, gloves, safety shoes, and safety glasses are used.

**8840-9****Aircraft Mechanical Parts Repairer****8840-9**

*General:* By comparison with the uncomplicated components repaired by grade 7 level workers, aircraft components and assemblies assigned to grade 9 level repairers are more complex and have a larger number of interrelating parts and closer tolerances requiring a higher level of skill in tracing hard-to-locate defects, rework, and reassembly. The parts include items such as constant speed drives, tail gear boxes, rotor head assemblies, flight and engine controls, hydromechanical clutches, accessory drive gear boxes, and intermediate gear boxes. Repairers at this level also have greater knowledge of how the various components fit and work together.

Grade 9 aircraft mechanical parts repairers disassemble, examine, evaluate, repair, align, balance, adjust, modify, test, troubleshoot, reassemble, and functionally test, calibrate, and maintain a variety of flight control and landing gear mechanical and hydraulic components and hydromechanical clutches, such as tail rotor drive shafts, rotor heads, wheel and rotor brake assemblies, and various quick change units. They may perform limited repair and adjustments on the assembly line or flight line of malfunctioning items previously repaired/overhauled.

*Skill and Knowledge:* Grade 9 aircraft mechanical parts repairers utilize knowledge of mechanical rework processes and procedures, basic electrical principles, and a basic understanding of hydraulic principles to diagnose, repair, and test a wide variety of mechanical components or assemblies such as constant speed drives, accessory drive gear boxes, rotor heads, cargo winches, flight and engine controls, intermediate gear boxes, main drive shafts, environmental control units, and quick change units. They employ a broad knowledge of shop and trade practices and are skilled in fitting, aligning, mating, adjusting, and shimming mechanical parts which function primarily to transmit power mechanically. They are capable of recognizing various types of debonding, corrosion, and metal defects and of determining whether to replace parts or rework by hand or machine lapping, honing, sanding, shimming, bonding, or checking all parts for critical dimensions, and making adjustments to assure the serviceability of the components within required specifications.

Grade 9 repairers are skilled in the use of powered and handtools, jigs, fixtures, special tools, test equipment, and instruments such as micrometers, dial indicators, vernier calipers, feeler gauges, ohmmeters, drill presses, and balancing equipment; and in the application of standard formulae, shop mathematics, trade theories, and industry practices in overhauling, repairing, and isolating the causes of malfunctions. They may also be required to set up and operate test equipment such as a hydraulic test stand to perform dynamic and static pressure tests and functional tests or a computerized spin or whirl tower to dynamically balance a complete hub and blade assembly and make appropriate adjustments to set blade pitching moments and tracking.

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Repairers at this level read and interpret technical orders, manufacturers' specification manuals, parts supply books, multiple-view blueprints, and schematic diagrams; and modify and assemble parts to specified critical tolerances, remove defects by honing or lapping until specified measurements are met, and adjust for alignment and fit to meet technical specifications.

*Responsibility:* Grade 9 aircraft mechanical parts repairers receive work assignments from their immediate supervisor in the form of work orders, quality inspection reports, verbal instructions, or computerized work documents. They independently pretest, disassemble, and examine components before overhaul to determine operational deficiencies, determine the serviceability, and the extent of disassembly necessary to repair a unit or to incorporate modifications, and determine the methods, techniques, and procedures to use in completing work assignments. They perform functional and operational tests and dimensional checks to assure that components/assemblies being reworked are within required tolerances and specifications. Grade 9 repairers plan and lay out their work using blueprints, schematics, work orders, and other specifications. The supervisor reviews work in progress and completed work for adherence to specifications and accepted trade practices.

*Physical Effort:* In addition to the physical effort described at the [grade 7 level](#), grade 9 repairers are frequently required to reach and work in awkward or cramped positions when placing items in test stands.

*Working Conditions:* Working conditions at this level are the same as those described at the [grade 7 level](#).

**8840-10****Aircraft Mechanical Parts Repairer****8840-10**

*General:* Grade 10 aircraft mechanical parts repairers disassemble, examine, repair, modify, overhaul, reassemble, test, and troubleshoot aircraft mechanical components and assemblies requiring more extensive aligning, fitting, adjusting, and troubleshooting sequences than the mechanical components characteristic of the grade 9 level. The grade 10 repairers are assigned aircraft components such as main transmissions, and other mechanical assemblies of equal or greater complexity, containing thousands of individual parts, which require sequential and interdependent adjustments and settings so that the components will automatically adjust to their own performance and meet specified operating requirements. Aircraft components assigned at this level are more complex and more difficult to adjust, align, rework, test, and troubleshoot in that their performance requires adjustments, alignments, and settings to be made over a range of performance levels and as each is made preceding settings may be affected.

Grade 10 repairers may be required to perform final operational tests (e.g., endurance, vibration, and performance) and lubrication runs in test cells on items repaired or overhauled. They troubleshoot and perform limited repair and adjustment on items failing test specifications or malfunctioning items on the assembly line or flight line.

*Skill and Knowledge:* Grade 10 aircraft mechanical parts repairers apply a comprehensive knowledge of mechanical principles to plan, lay out, and perform work involving disassembly, examination, repair, modification, overhaul, reassembly, test, and troubleshooting of mechanical components of significant complexity such as main transmissions and similar assemblies of equal or greater complexity. The work requires a comprehensive knowledge of mechanical principles, a broad knowledge of shop and trade practices, a basic knowledge of electricity, and a practical knowledge of principles governing the behavior of fluids as they pertain to hydraulic components reworked or overhauled. Repairers at this level are highly skilled in diagnosing the cause of operational failures, determining the extent of repairs, and whether to rework or replace worn or damaged parts. They are skilled in establishing and maintaining numerous sequential and interdependent adjustments and critical tolerances based on alignment, concentricity, and parallelism. Based on their knowledge of the complex interrelationships of the various subassemblies that make up the total unit, they are able to overhaul the unit in an economical and timely manner to assure serviceability.

Grade 10 repairers have a thorough knowledge of the procedures necessary to perform final operational tests of items modified or overhauled. They are skilled in applying and adapting their knowledge of equipment, adjustments, test procedures, and test facilities and equipment to overhauled and modified components and assemblies.



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Grade 10 repairers are knowledgeable of technical information sources and other applicable publications and they interpret and apply the technical data and specifications contained in manufacturers' manuals, technical orders, complex multiview drawings and schematics to various work assignments.

*Responsibility:* Grade 10 aircraft mechanical parts repairers work alone or as part of an overhaul team under the general supervision of the section supervisor, who makes assignments orally or in writing. Work assignments are typically supplemented with blueprints, schematics, quality control reports, and work documents such as shop travelers or computerized card decks. They troubleshoot complex components during disassembly and functionally test components/assemblies to determine the area of difficulty, parts required, and the methods and procedures to follow in completing work.

They independently plan the work sequence, complete the work, perform various functional and operational tests, and make adjustments and alignments to ensure the component or assembly and its integral parts are functioning properly. Grade 10 repairers work with a minimum of guidance; however, the supervisor periodically checks completed work for compliance with acceptable trade practices, operating specifications, and technical orders and is available with technical advice on unusually difficult problems.

*Physical Effort:* Physical effort at this level is the same as that described at the [grade 9 level](#).

*Working Conditions:* Working conditions at this level are the same as those described at the [grade 7 level](#).